

REMARKS

The Office examined claims 1-11 and rejected same. With this paper, none of the claims are amended, none are added and none are canceled.

Claim Rejections under 35 USC §102(b) or §103(a)

At page 2, section 2 of the Office Action, claims 1-4 and 6-11 are rejected under 35 USC §102(b) as anticipated by or, in the alternative, under 35 USC §103(a) as obvious over Mitsuo (JP08-269112, Mitsuo hereinafter).

The present invention relates to a dispersing agent comprising a polyvinyl alcohol polymer (PVA) which has conjugated double bonds in its molecule and the fatty acid ester unit of which are more randomly distributed as compared with conventional PVA-based dispersing agent (see Background of the Invention). Conjugated double bonds are produced by melt heat treatment of the PVA resin using an extruder, whereby the degree of randomness in distribution of the fatty acid vinyl ester units in the PVA resin is enhanced (page 16, lines 20-25 of the instant application). Claim 1 recites that the PVA resin has an enhanced degree of randomness in distribution of the fatty acid vinyl ester units, characterized by a block character of remaining fatty acid ester groups of at least 0.5.

In the Office Action, the Examiner states: "In view of the substantially identical polyvinyl alcohol disclosed by Mitsuo and by applicants, it is Examiner's position to believe that the polyvinyl alcohol of Mitsuo would inherently possess the block character of remaining fatty acid ester groups of at least 0.5." Applicant respectfully disagrees with this assertion.

Mitsuo discloses that the PVA resin may be heat-treated in a solid state at a temperature range of 120°C to 180°C (more desirable, 140°C to 155°C) for 0.5 to 5 hours, or may be heat-treated by melt-extrusion (paragraph [0015] of English translation of Mitsuo).

Applicant respectfully submits that, based on the following reasons, the heat treatment

conditions as taught by Mitsuo are not sufficient to produce a PVA resin having a block character of remaining fatty acid ester groups of at least 0.5.

1. The optimum heat treatment temperature range in Mitsuo is too low for obtaining a block character of 0.5.

Mitsuo discloses that the PVA resin may be heat-treated at a temperature range of 120°C to 180°C for 0.5 to 5 hours. Mitsuo teaches that if the heat treatment temperature is more than 180°C, the decomposition caused by the heat-treatment occurs intensely. Therefore, heat treatment of higher than 180°C should be avoided. Even so, the more desirable temperature range is 140°C to 155°C (paragraph [0015] of English translation of Mitsuo).

In the Example in Mitsuo, the heat-treatment of PVA resin was carried out in a heat-treatment vessel at 145°C for 3 hours (see [0023] of English translation of Mitsuo). This example is similar to what is described in the instant specification as Comparative Example 1, in which the heat-treatment of PVA resin was carried out in the powder state in a heat-treatment vessel at 150°C for 5 hours. The block character of the PVA resin after the heat treatment was 0.47, which is lower than the claimed range in claim 1 (not less than 0.5).

Therefore, it is reasonable to believe that the PVA resin in the Example of Mitsuo, which was heat-treated at a lower temperature (145°C) for a shorter time (3 hours) than that of the Comparative Example 1 of the present application, would have a block character lower than 0.47. The PVA resin in the Example of Mitsuo is therefore unsuitable for use as a dispersing agent (page 18, lines 2-6 of the instant specification).

For supporting this argument, the detailed description of the Comparative Example 1 in the applicant's specification is submitted in the form of a Declaration under 37 CFR 1.132. Applicant manifests that the Comparative Example 1 of the instant application was carried out according to the experimental conditions as described in the instant specification as well as in

the Declaration, and results were obtained as shown in Tables 3 and 4 of the instant application as well as in the Declaration.

2. Mitsuo does not teach temperature range and other conditions in melt extrusion that would result in the block character of the heat-treated PVA in the claimed range.

In order to obtain a block character of not less than 0.5, it is necessary to melt-extrude (melt-knead) the PVA resin. By melt extrusion, the elimination reaction of acetic acid can be proceeded uniformly, so that the conjugated double bond is introduced into the PVA resin and the block character of the PVA is increased. In the instant specification, examples are given that the PVA resin temperatures during the melt extrusion were between 195°C and 210°C, and resulting block characters of the PVA resin are between 0.53 and 0.62.

Even though Mitsuo teaches: "Moreover, heat-treating by melting extrusion, etc. is also possible (paragraph [0015])", nowhere in the reference a temperature range and other conditions of the melting extrusion are disclosed.

Because Mitsuo explicitly teaches that a heat-treatment at a temperature of more than 180°C is not desirable, as mentioned above, even if a PVA resin is melt-extruded at a temperature of from 120° to 180°C, the PVA resin could not be molten sufficiently and would not give a block character of no less than 0.5.

Based on the foregoing, the polyvinyl alcohol disclosed by Mitsuo would not inherently possess the block character of remaining fatty acid ester groups of at least 0.5. Therefore, claim 1 is believed to be patentable in view of Mitsuo. Applicant respectfully requests the rejections of claim 1 be reconsidered and withdrawn.

Claims 2-4 and 6-11 depend from claim 1. Since claim 1 is believed to be patentable, claims 2-4 and 6-11 are also patentable. Applicant respectfully requests the rejections of these claims under 35 USC 102(b) or 103(a) be reconsidered and withdrawn.

Claim Rejection under 35 USC §103(a)

At page 4, section 3 of the Office Action, claim 5 is rejected under 35 USC 103(a) as being unpatentable over Mitsuo (JP08-269112) in view of Tokita (US Patent No. 6,448,321 B1).

Claim 5 depends from claim 3, which, in turn, depends from claim 1. Since claim 1 is believed to be patentable, claim 5 is also patentable. Applicant respectfully requests the rejections of claim 5 under 35 USC 103(a) be reconsidered and withdrawn.

Declaration under 37 CFR §1.132

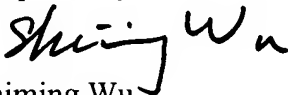
A Declaration under 37 CFR §1.132 is filed with this paper. Applicant respectfully requests the consideration of the Declaration by the Office.

Conclusion

For all the foregoing reasons, it is believed that all of the claims of the instant application are patentable, and their passage to issue is earnestly solicited. Applicant's agent urges the Examiner to call to discuss the present response if anything in the present response is unclear or unpersuasive.

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Respectfully submitted,


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